

Mr. Jason Pelton
Project Manager
New York State Department of Environmental Conservation (NYSDEC)
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Subject:
January to June 2018 Semi-Annual Progress Report
Northrop Grumman Systems Corporation
Operable Unit 3 (OU3), NYSDEC Site ID # 1-30-003A,
Bethpage, New York

ENVIRONMENT

Date:
July 10, 2018

Contact:
David Stern

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Our ref:
NY001496.35TM.RPTB6

Dear Mr. Pelton:

In accordance with Section III of Administrative Order on Consent (AOC) Index # W1-0018-04-01, and the May 2011 Work Plan for Modification of AOC Progress Report (work plan), this letter report describes OU3 activities performed by Northrop Grumman Systems Corporation (Northrop Grumman) from January through June 2018. Activities planned for July through December 2018 are also summarized. In accordance with the approved work plan, these reports will be submitted to the NYSDEC on a semi-annual basis until it is determined that the reports are no longer necessary. The site plan showing well locations is provided on **Figure 1**.

OU3 ACTIVITIES CONDUCTED DURING JANUARY THROUGH JUNE 2018

Bethpage Park Soil Gas Containment System (Formerly Soil Gas IRM)

- Continued Operation, Maintenance, and Monitoring (OM&M) of the Bethpage Park Soil Gas Containment System (BPSGCS)
- Submitted the BPSGCS 2017 Annual and First Quarter 2018 OM&M Reports (March and May 2018, respectively) to the NYSDEC

- The BPSGCS shut down for approximately four days in May 2018 due to PSEG LI schedule service to the site electrical switchgear.

Bethpage Park Groundwater Containment System (Formerly Groundwater IRM)

- Continued OM&M of the Bethpage Park Groundwater Containment System (BPGWCS)
- Submitted BPGWCS 2017 Annual and First Quarter 2018 Quarterly OM&M Reports (March and May 2018, respectively) to the NYSDEC
- Significant shutdown instances this period are summarized below. In each instance the system was fully restored following shutdown.
 - April 2018 – Four days of downtime were recorded due to lost internet connectivity and air stripper mass flowmeter malfunction.
 - June 2018 – Four days of downtime were recorded due to power surge from PSEG LI scheduled service that resulted in replacement of PLC

Other

- Performed quarterly monitoring rounds for Monitoring Wells MW109-3 and MW111-4 and monthly monitoring rounds for Monitoring Well MW116-5 from January through June 2018. Validated analytical results obtained from the January through June 2018 period are provided in **Table 1**.
- As requested by NYSDEC (correspondence dated April 10, 2018), prepared work plan for 1,4-dioxane and Per- and Polyfluoroalkyl Substances (PFAS) sampling at select monitoring wells as a single event. The May 7, 2018 work plan was subsequently approved by NYSDEC (correspondence dated June 8, 2018). Also prepared the wells for PFAS sampling by removing dedicated sampling equipment not compatible with PFAS sampling from the wells.

OU3 ACTIVITIES SCHEDULED DURING JULY THROUGH DECEMBER 2018

Bethpage Park Soil Gas Containment System

- Continue OM&M of the BPSGCS
- Submitted the BPGWCS Second and Third Quarter 2018 Reports (August and November 2018, respectively) to the NYSDEC

Bethpage Park Groundwater Containment System

- Continue OM&M of the BPGWCS
- Submit OU3 BPGWCS Second and Third Quarter 2018 Reports (August and November 2018, respectively) to the NYSDEC

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- Perform annual monitoring round for BPGWCS system in August 2018

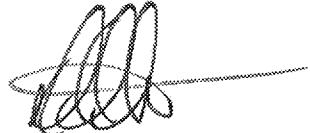
Other

- Perform quarterly monitoring rounds for Monitoring Wells MW109-3 and MW111-4 and monthly monitoring rounds for Monitoring Well MW116-5.
- Perform sampling of selected OU3 monitoring wells in accordance with the NYSDEC-approved Work Plan.

Feel free to call us if you have any questions.

Sincerely,

Arcadis of New York, Inc.



David E. Stern, PG
Senior Hydrogeologist/Associate Project Manager

Copies:

S. Karpinski – NYSDOH
D. Hesler – NYSDEC
W. Parrish - NYSDEC
E. Hannon, Northrop Grumman
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Bethpage Public Library – Public Repository
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Enclosures:

Table

- 1 Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells

Figure

- 1 Site Plan Showing OU3 Well Locations

TABLE



Table 1.
Concentrations of Volatile Organic Compounds in
Groundwater Samples Collected from Monitoring Wells,
Northrop Grumman Systems Corporation,
Bethpage, New York.

Constituents (units in µg/L)	Location ID: Sample Date:	MW-108-3 2/14/2018	MW-109-3 5/10/2018	MW-111-4 2/14/2018	MW-111-4 5/10/2018
1,1,1-Trichloroethane		<1.0	<1.0	1.2	1.1 J
1,1,2,2-Tetrachloroethane		<1.0	<1.0	<1.0	<4.0
1,1,2-Trichloroethane		<1.0	<1.0	0.97 J	<4.0
1,1-Dichloroethane		3	3	8.6	9.1
1,1-Dichloroethene		0.93 J	0.88 J	5.7	5.5
1,2-Dichloroethane		0.90 J	1.1	3.4	3.6 J
1,2-Dichloropropane		<1.0	0.42 J	0.91 J	<4.0
1,3-Butadiene		<5.0	<5.0	<5.0	<20
1-chloro-1,1-difluoroethane		<5.0	<5.0	<5.0	<20
2-Butanone		<10	<10	<10	<40
2-Hexanone		<5.0	<5.0	<5.0	<20
4-methyl-2-pentanone		<5.0	<5.0	<5.0	<20
Acetone		<10	<10	<10	<40 b
Benzene		<0.50	<0.50	<0.50	<2.0
Bromodichloromethane		<1.0	<1.0	<1.0	<4.0
Bromoform		<1.0	<1.0	<1.0	<4.0
Bromomethane		<2.0	<2.0	<2.0	<8.0
Carbon Disulfide		<2.0	<2.0	<2.0	<8.0
Carbon Tetrachloride		<1.0	<1.0	<1.0	<4.0
Chlorobenzene		<1.0	<1.0	<1.0	<4.0
Chlorodifluoromethane (Freon 22)		<5.0	3.2 J	<5.0	<20
Chloroethane		<1.0	<1.0	<1.0	<4.0
Chloroform		4.7	5.2	2.7	3.2 J
Chloromethane		<1.0	<1.0	<1.0	<4.0
cis-1,2-dichloroethene		166	203	733	791
cis-1,3-dichloropropene		<1.0	<1.0	<1.0	<4.0
Dibromochloromethane		<1.0	<1.0	<1.0	<4.0
Dichlorodifluoromethane (Freon 12)		<2.0	<2.0	<2.0	<8.0
Ethylbenzene		<1.0	<1.0	<1.0	<4.0
Methyl tert-Butyl Ether		--	--	--	--
Methylene Chloride		<2.0	<2.0	<2.0	<8.0
Styrene		<1.0	<1.0	<1.0	<4.0
Tetrachloroethene		1.9	1.8	10.9	9.6
Toluene		<1.0	<1.0	<1.0	<4.0
trans-1,2-dichloroethene		0.93 J	1.3	3	4.7
trans-1,3-dichloropropene		<1.0	<1.0	<1.0	<4.0
Trichloroethylene		230	312	1540	1420
Trichlorofluoromethane (CFC-11)		--	--	--	--
Trichlorotrifluoroethane (Freon 113)		<5.0	<5.0	<5.0	<20
Vinyl Chloride		<1.0	<1.0	<1.0	<4.0
Xylene-o		<1.0	<1.0	<1.0	<4.0
Xylene-m,p		<1.0	<1.0	<1.0	<4.0
TVOCs		410	530	2,300	2,200
1,4-Dioxane		8.85	6.94	40.9 J	31.2 J

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds in
Groundwater Samples Collected from Monitoring Wells,
Northrop Grumman Systems Corporation,
Bethpage, New York.

Constituents (units in µg/L)	Location ID Sample Date	MW-116-5 1/22/2018	MW-116-5 2/15/2018	MW-116-5 3/15/2018	MW-116-5 4/3/2018	MW-116-5 5/11/2018	MW-116-5 6/12/2018
1,1,1-Trichloroethane		2.3 J	<10	2.5 J	<5.0	2.6 J	2.8
1,1,2,2-Tetrachloroethane		<5.0	<10	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane		2.2 J	<10	3.0 J	3.2 J	3.5 J	3.1
1,1-Dichloroethane		5.8	6.4 J	7.1	7.4	7.1	7.7
1,1-Dichloroethene		9.1	9.6 J	9.9	11.6	9.8	11.0
1,2-Dichloroethane		18.6	19	19.4	21.4	19.8	21.0
1,2-Dichloropropane		5.1	4.5 J	5.7	6.9	5.9	6.4
1,3-Butadiene		<25	<50	<25	<25	<25	<25
1-chloro-1,1-difluoroethane		<25	<50	<25	<25	<25	<25
2-Butanone		<50	<100	<50	<50	<50	<50
2-Hexanone		<25	<50	<25	<25	<25	<25
4-methyl-2-pentanone		<25	<50	<25	<25	<25	<25
Acetone		<50	<100	<50	<50	<50	<50
Benzene		<2.5	<5.0	1.3 J	<2.5	<2.5	<2.5
Bromodichloromethane		<5.0	<10	<5.0	<5.0	<5.0	<5.0
Bromoform		<5.0	<10	<5.0	<5.0	<5.0	<5.0
Bromomethane		<10	<20	<10	<10	<10	<10
Carbon Disulfide		<10	<20	<10	<10	<10	<10
Carbon Tetrachloride		2.3 J	<10	2.6	2.4 J	2.6 J	3.0
Chlorobenzene		<5.0	<10	<5.0	<5.0	<5.0	<5.0
Chlorodifluoromethane (Freon 22)		<25	<50	<25	<25	<25	<25
Chloroethane		<5.0	<10	<5.0	<5.0	<5.0	<5.0
Chloroform		16.7	19.6	18.9	21.0	19.6	20.6
Chloromethane		<5.0	<10	<5.0	<5.0	<5.0	<5.0
cis-1,2-dichloroethene		327	383	385	431	433	346
cis-1,3-dichloropropene		<5.0	<10	<5.0	<5.0	<5.0	<5.0
Dibromochloromethane		<5.0	<10	<5.0	<5.0	<5.0	<5.0
Dichlorodifluoromethane (Freon 12)		<10	<20	<10	<10	<10	<10
Ethylbenzene		<5.0	<10	<5.0	<5.0	<5.0	<5.0
Methyl tert-Butyl Ether		--	--	--	--	--	--
Methylene Chloride		<10	<20	<10	<10	<10	<10
Styrene		<5.0	<10	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene		<5.0	<10	<5.0	<5.0	2.7 J	2.5
Toluene		<5.0	<10	<5.0	<5.0	<5.0	<5.0
trans-1,2-dichloroethene		<5.0	<10	2.8 J	2.6 J	3.0 J	2.6
trans-1,3-dichloropropene		<5.0	<10	<5.0	<5.0	<5.0	<5.0
Trichloroethylene		1930	2110	2210	2420	2670	2230
Trichlorofluoromethane (CFC-11)		--	--	--	--	--	--
Trichlorotrifluoroethane (Freon 113)		<25	<50	<25	<25	<25	<25
Vinyl Chloride		<5.0	<10	<5.0	<5.0	<5.0	<5.0
Xylene-o		<5.0	<10	<5.0	<5.0	<5.0	<5.0
Xylene-m,p		<5.0	<10	<5.0	<5.0	<5.0	<5.0
TVOCs		2,300	2,600	2,700	2,900	3,200	2,700
1,4-Dioxane		71.3 J	63.7	69.6	52.6	95.1	

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds in
Groundwater Samples Collected from Monitoring Wells,
Northrop Grumman Systems Corporation,
Bethpage, New York.

Notes and Abbreviations:

Results validated following protocols specified in March 2006 RI/FS Work Plan (ARCADIS G&M, Inc. 2006).

Samples analyzed for TCL VOCs using EPA Method 8260C.

Samples analyzed for 1,4-Dioxane using USEPA Method 522.

TVOCs are rounded to two significant figures.

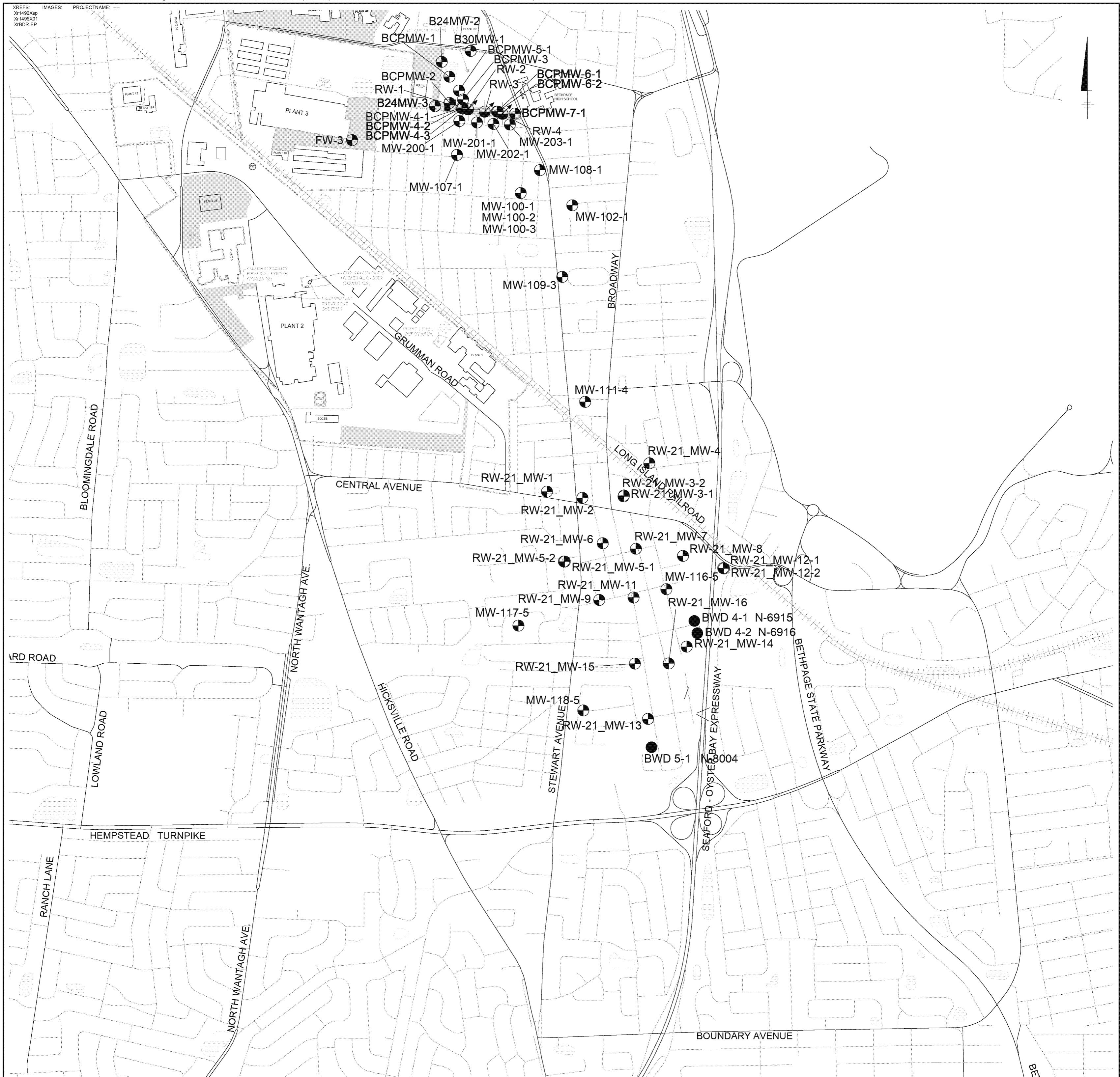
Bold value indicates a detection.

RI/FS	Remedial Investigation/Feasibility Study
NYSDEC	New York State Department of Environmental Conservation
TCL	Target compound list
VOC	Volatile Organic Compound
TVOC	Total Volatile Organic Compounds
ug/L	Micrograms per liter
J	Value is estimated

FIGURES



XREFS: IMAGES: PROJECTNAME: ---
 X1496Xp0
 X1496X01
 XBDR-EP



EXPLANATION:

- FORMER NORTHROP GRUMMAN PROPERTY BOUNDARY
- FORMER OCCIDENTAL CHEMICAL CORPORATION PROPERTY BOUNDARY
- NORTHROP GRUMMAN PROPERTY
- FORMER NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
- MONITORING WELL
- REMEDIAL WELL
- INJECTION WELL
- PUBLIC SUPPLY WELL
- NAVY AND BETHPAGE WELLS SHOWN FOR REFERENCE PURPOSES

0 500' 1000' 2000'
 APPROXIMATE SCALE IN FEET

NORTHROP GRUMMAN SYSTEMS CORPORATION
 BETHPAGE, NEW YORK

SITE PLAN
 SHOWING OU3 WELL LOCATIONS